OPERATING AND MAINTENANCE INSTRUCTIONS

TWO-POSITION DIVERTER

MODEL 2323

DELTA DESIGN INC.

LA MESA, CALIFORNIA

MP MASTER
MA32419

OPERATING AND MAINTENANCE INSTRUCTIONS

TWO-POSITION DIVERTER

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INTRODUCTION

The Delta TWO-POSITION DIVERTER Model 2323 is a highly versatile unit designed to provide semiconductor device carrier handling selectivity. The TWO-POSITION DIVERTER will readily accept the TO-5, D.I.P. and Flat Pack package configurations. The TWO-POSITION DIVERTER is adaptable to all Delta Magazines, Tracks, and Bin combinations at its two outputs.

Photo sensors indicate a "back-up or loaded condition in either or both magazines. Major directional operation is accomplished by an electrical signal from a Delta Sort Control or customer's end of test signal.

1.0 POWER REQUIREMENTS

Line Cord: 120 volts ± 10 volts 50-60 Hz, at 1/2 amp.

1.1 SORT SIGNAL REQUIREMENTS

A momentary or maintained contact closure or transistor driven pulldown to ground, rated for no less than 12 VDC at 20 milliamps. Built-in buffer and isolation amplifiers reduce this drive requirement to 0.1 milliamp or less.

1.2 ELECTRICAL FEATURES

Basic circuit, refer to drawing D2602504: Power supply transformer furnishes 28 volt AC at terminal 3, and 12 volt DC (after rectification) at terminal 17, with respect to ground (common) terminal 16. The customer may ground or float terminal 16 at his option. K1 is a reed relay, which furnishes an "end-of-test" signal (normally closed contacts will open) any time a sort signal is received. (Stepper Motor operation diverts carriers for sorts 1 and 2.)

1.3 SORT CONTROL, REFER TO DRAWING C2602505

The sort control serves two purposes: (1) it houses two push button switches for manual sort signal inputs. (2) it houses two buffer amplifiers and reed relays to provide amplification and isolation of the customers sort signals as an option. Reed relays of the proper voltage have to be selected and plugged into the proper positions to accomodate the customers signal level and sense. The relays should be energized to give a sort signal. The customer must also furnish power to the buffer amplifier. (terminals 2 (-) and 1 (+).

Select relays according to the following table:

SIGNAL SWING VOLTS D.C.	USE RELAY TYPE (PHIPPS)	DRIVE SIGNAL CURRENT MICROAMPS	POWER SUPPLY CURRENT MILLIAMPS
5 MIN., 12 MAX	OF-1A-6	200	20 TO 40
12 MIN., 24 MAX	OF-1A-12	100	10 TO 20
24 MIN., 48 MAX.	OF-1A-24	50	5 TO 10

INTERCONNECTION DIAGRAM, REFER TO DRAWING D2602506

This drawing shows the necessary interconnections between sorter electronics, sort control, and customers equipment.

1.4 THE PHOTO SENSOR UNIT

The Photo-Sensors are adjustable as to delay and sensitivity by the two screws accessible through holes in the covers (see Figure 1) and marked "D" and "S" respectively.

1.4.1 REPLACING THE PHOTO SENSOR LIGHT BULB

The Photo Sensor light bulb is easily accessible by removing the protective cover and pulling outward on the adapter, then removing the bulb from the holder. To replace, reverse the procedure. Be sure to replace the red rubber filter over the new bulb. The Photo Sensor sensitivity setting may need re-adjustment after the bulb is replaced.

2.0 WARRANTY

All parts and performance of the Model 2323 TWO-POSITION DIVERTER are warranted for a period of 90 days. Where components are warranted by the manufacturer (other than Delta Design Inc.,) such a warranty is transferred to the customer.

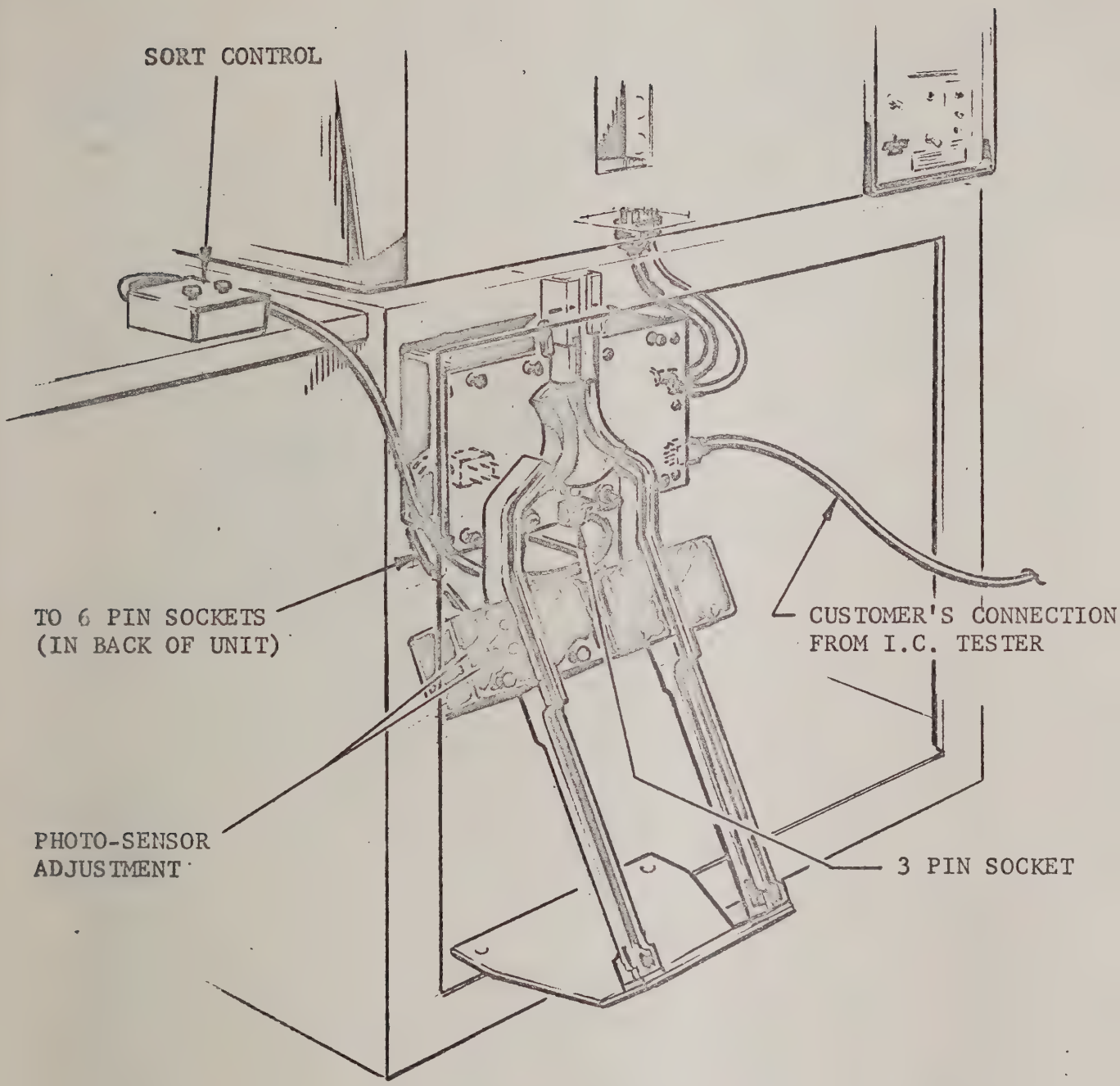


FIGURE 1
TWO-POSITION DIVERTER
ON THE DELTA SUPER CHARGER 72

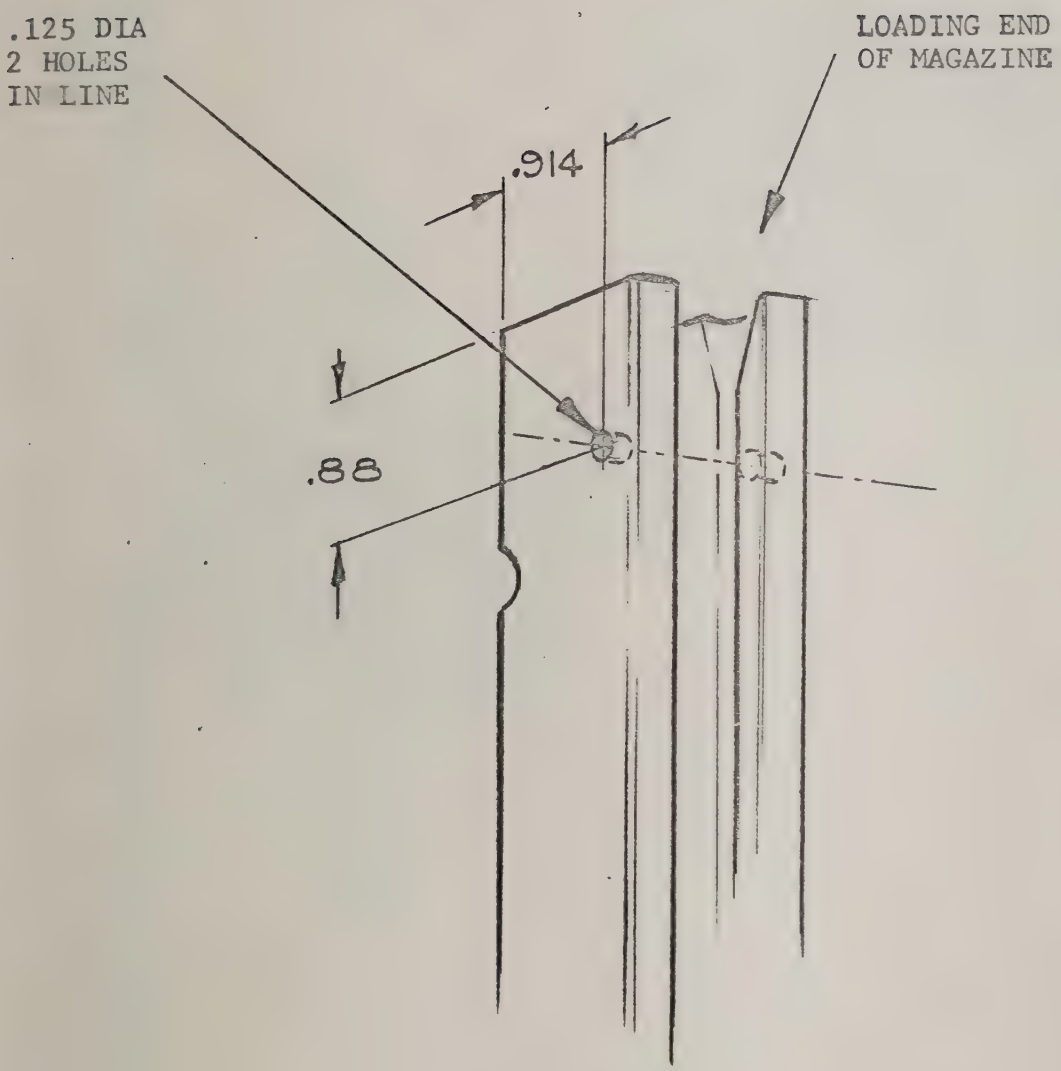
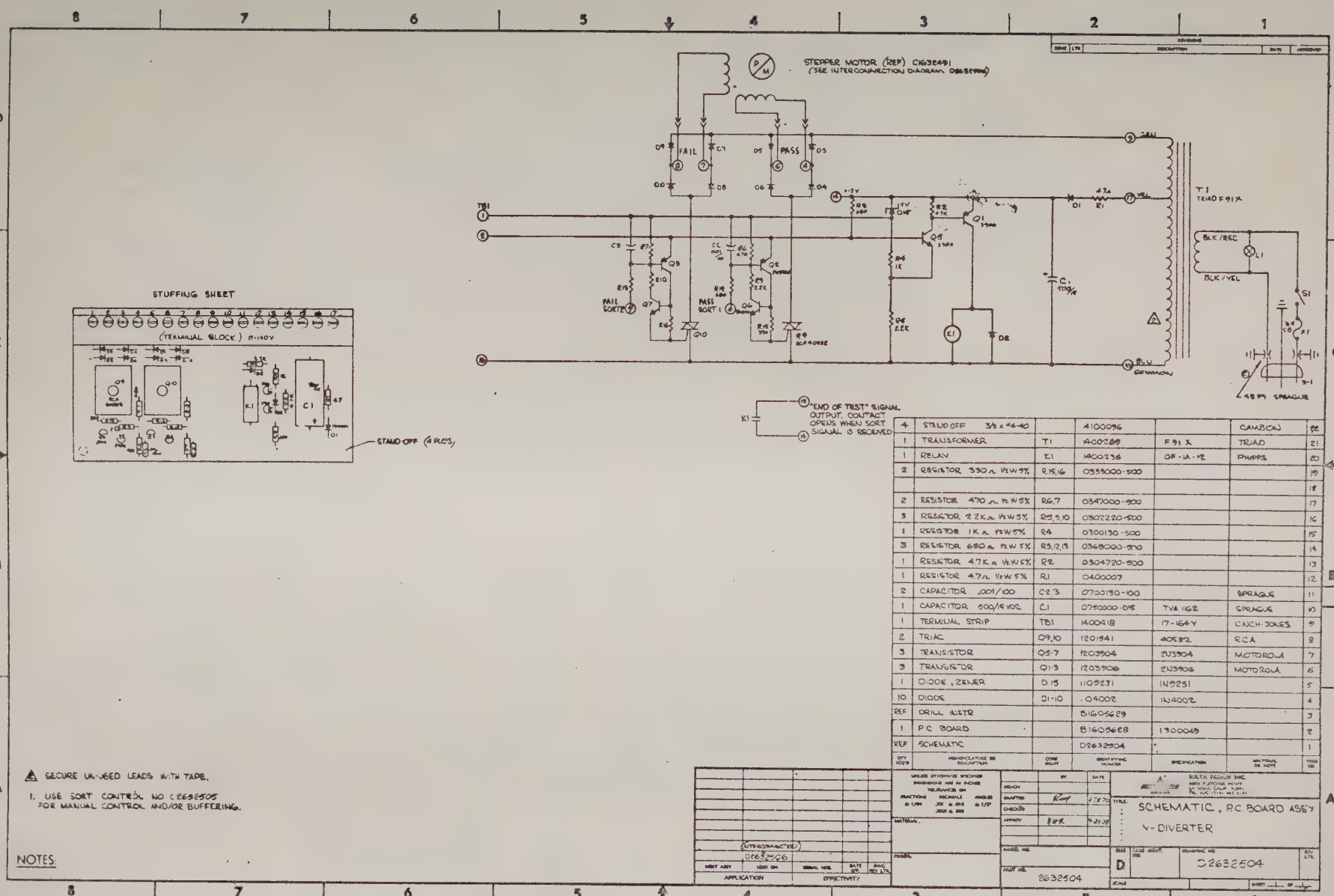


FIGURE 2
MAGAZINE RE-WORK

This re-work is necessary to enable passage of the Photo-Sensor light beam.



QTY	NOMENCLATURE OR DESCRIPTION	CODE NUMBER	IDENTIFYING NUMBER	MFR'S CODE	MATERIAL OR NOTE	ITEM
4	STUD OFF 3/8 x #6-40		4100096		CAMBION	22
1	TRANSFORMER	T1	1400289	F 91 X	TRIAD	21
1	RELAY	K1	1400236	OR-1A-12	PHIPPS	20
2	RESISTOR 330Ω 1/2W 5%	R15,16	0335000-500			19
						18
2	RESISTOR 470Ω 1/2W 5%	R6,7	0347000-500			17
3	RESISTOR 2.2KΩ 1/2W 5%	R5,9,10	0322220-500			16
1	RESISTOR 1KΩ 1/2W 5%	R4	0300130-500			15
3	RESISTOR 680Ω 1/2W 5%	R3,12,13	0368000-500			14
1	RESISTOR 4.7KΩ 1/2W 5%	R2	0304720-500			13
1	RESISTOR 4.7Ω 1/2W 5%	R1	0400007			12
2	CAPACITOR .001/100	C2,3	0700130-100		SPRAGUE	11
1	CAPACITOR 500/15 VDC	C1	0750000-015	TVA 1152	SPRAGUE	10
1	TERMINAL STRIP	TB1	1400418	17-164-Y	C.INCH-JONES	9
2	TRIAC	Q9,10	1201541	40572	RCA	8
3	TRANSISTOR	Q5-7	1203904	2N3904	MOTOROLA	7
3	TRANSISTOR	Q1-3	1203906	2N3906	MOTOROLA	6
1	DIODE, ZENER	D13	1105231	IN5231		5
10	DIODE	D1-10	1104002	IN4002		4
REF	DRILL INSTR		B1605629			3
1	P.C. BOARD		B1605628	1300049		2
REF	SCHEMATIC		D2632504			1

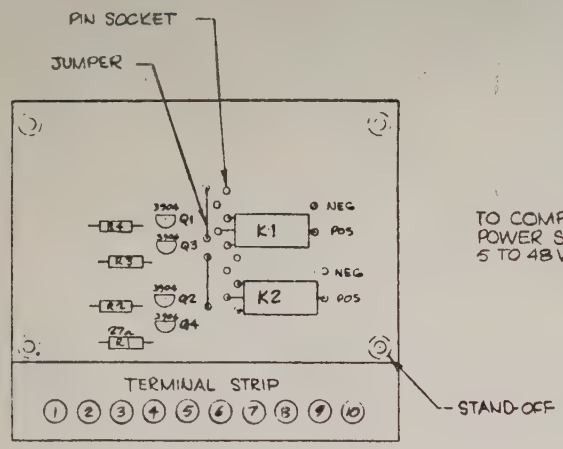
⚠ SECURE UNUSED LEADS WITH TAPE.

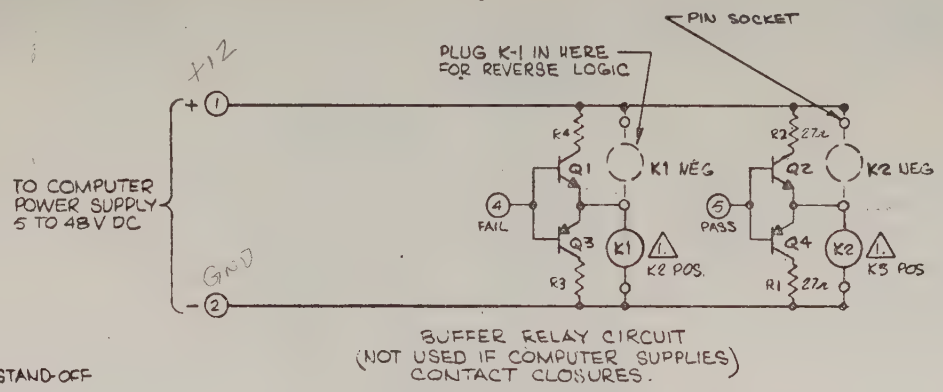
1. USE SORT CONTROL NO C2635505 FOR MANUAL CONTROL AND/OR BUFFERING.

NOTES:

FIGURE 3

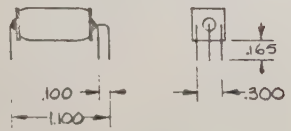
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





BUFFER RELAY CIRCUIT
(NOT USED IF COMPUTER SUPPLIES)
CONTACT CLOSURES.

DRESS RELAY LEADS
AS SHOWN BELOW



⚠1 THESE REED RELAYS ARE PLUGGED IN ACCORDING TO SIGNAL VOLTAGE & SENSE.

SIGNAL LEVEL	RELAY NO.
5-12 V	PHIPPS OF-1A-6
12 - 24 V	PHIPPS OF-1A-12
24 - 48 V	PHIPPS OF-1A-24

NOTES:

QTY REQ'D	NOMENCLATURE OR DESCRIPTION	CODE IDENT	IDENTIFYING NUMBER	SPECIFICATION	MATERIAL OR NOTE	ITEM NO

NEXT ASSY	USED ON	SERIAL NOS	DATE EFF	DWG REV LTR
	(INTERCONNECTION) D1632506			

APPLICATION | EFFECTIVITY

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN INCHES
TOLERANCES ON
FRACTIONS 1/64 DECIMALS XX ± .010 XXX ± .005 ANGLES ± 1/2

MATERIAL

FINISH

	BY	DATE
DESIGN		
DRAFTED	R M	4-27-70
CHECKED		
APPROV	BMR	4-30-70

PART NO 2632505

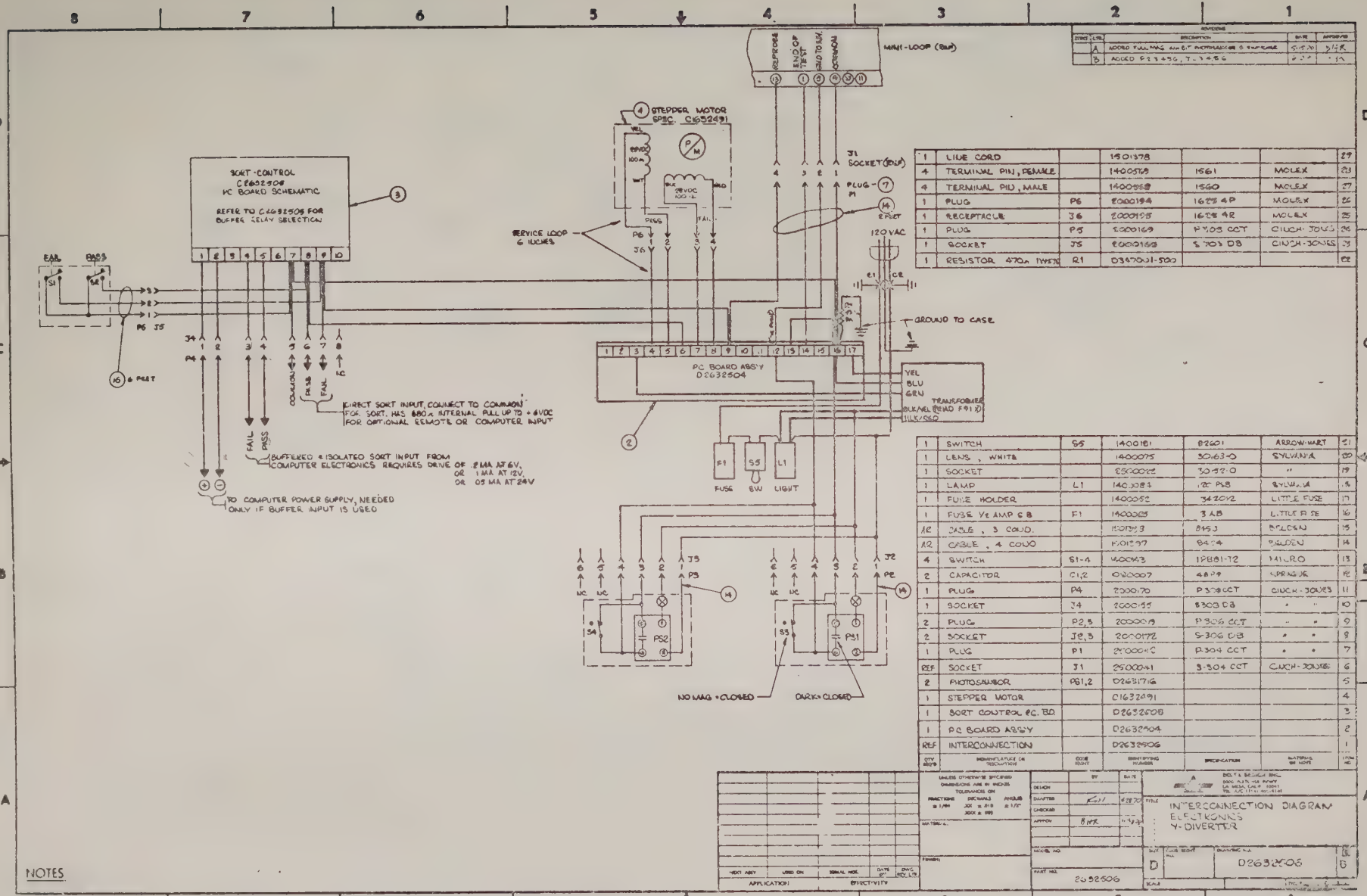
DELTA DESIGN INC.
8000 FLETCHER PKWY
LA MESA CALIF 92041
TEL A/C (714) 465 4141

TITLE: SCHEMATIC, & P.C. BOARD ASSY SORT CONTROL, Y-DIVERTER

SIZE C | CODE IDENT. NO. | DRAWING NO. C2632505 | REV. LTR

SCALE 1:1

FIGURE 4


MAIN-LOOP (BLK)
REFERENCE
END OF LOOP TEST
AUTO TOUCH
COMMON
STEPPER MOTOR SPEC. C1632491
SORT-CONTROL C1632508 PC BOARD SCHEMATIC
REFER TO C1632508 FOR BUFFER DELAY SELECTION
SERVICE LOOP 6 INCHES
J1 SOCKET
PLUG - P1
EJECT
120 VAC
GROUND TO CASE
PC BOARD ASS'Y D2632504
TRANSFORMER
FUSE
SW
LIGHT
PASS
FAIL
COMMON
DIRECT SORT INPUT, CONNECT TO COMMON FOR SORT. HAS 680Ω INTERNAL PULL UP TO +6VDC FOR OPTIONAL REMOTE OR COMPUTER INPUT
BUFFERED & ISOLATED SORT INPUT FROM COMPUTER ELECTRONICS REQUIRES DRIVE OF 2 MA AT 6V, OR 1 MA AT 12V, OR .05 MA AT 24V
TO COMPUTER POWER SUPPLY, NEEDED ONLY IF BUFFER INPUT IS USED
NO MAG = CLOSED
DARK = CLOSED
NOTES
INTERCONNECTION DIAGRAM ELECTRONICS Y-DIVERTER
D2632506

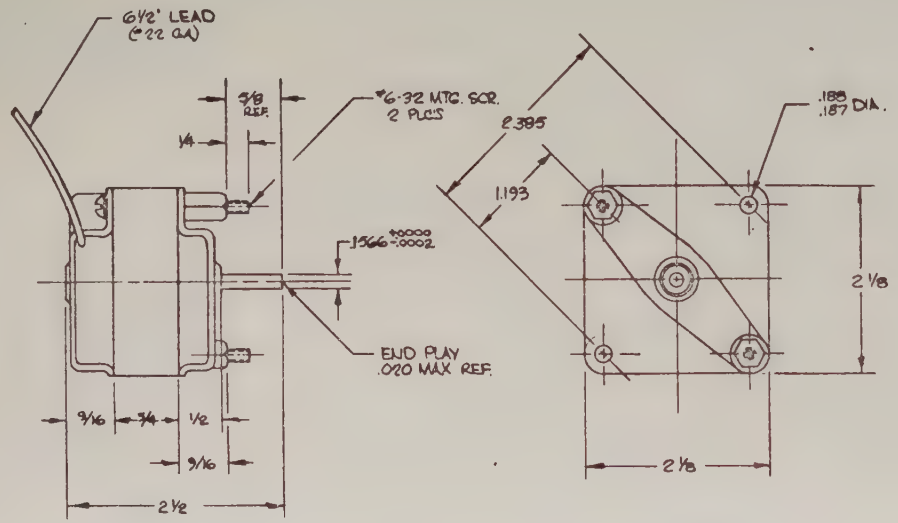
1	LINE CORD		1501378			29
4	TERMINAL PIN, FEMALE		1400569	1561	MOLEX	28
4	TERMINAL PIN, MALE		1400568	1560	MOLEX	27
1	PLUG	P6	2000194	1625 4P	MOLEX	26
1	RECEPTACLE	J6	2000195	1626 4R	MOLEX	25
1	PLUG	P5	2000169	P-303 CCT	CINCH-JONES	24
1	SOCKET	J5	2000168	S-303 DB	CINCH-JONES	23
1	RESISTOR 470Ω 1W±5%	R1	D3470J1-500			22

1	SWITCH	S5	1400181	82601	ARROW-HART	21
1	LENS, WHITE		1400075	3016?-0	SYLVANIA	20
1	SOCKET		2500022	3016?-0	"	19
1	LAMP	L1	1400084	12C P8	SYLVANIA	18
1	FUSE HOLDER		1400052	342012	LITTLE FUSE	17
1	FUSE ½ AMP S B	F1	1400085	3 AB	LITTLE FUSE	16
AR	CABLE, 3 COND.		H-01393	8455	BELDEN	15
AR	CABLE, 4 COND		H-01397	8454	BELDEN	14
4	SWITCH	S1-4	1400143	1PB81-T2	MICRO	13
2	CAPACITOR	C1,2	0900007	4829	SPRAGUE	12
1	PLUG	P4	2000170	P-306 CCT	CINCH-JONES	11
1	SOCKET	J4	2000155	S-306 DB	" "	10
2	PLUG	P2,3	2000019	P-306 CCT	" "	9
2	SOCKET	J2,3	2000172	S-306 DB	" "	8
1	PLUG	P1	2000040	P-304 CCT	" "	7
REF	SOCKET	J1	2500041	S-304 CCT	CINCH-JONES	6
2	PHOTOSENSOR	PS1,2	D2631716			5
1	STEPPER MOTOR		C1632491			4
1	SORT CONTROL PC. BD		D2632508			3
1	PC BOARD ASSY		D2632504			2
REF	INTERCONNECTION		D2632506			1

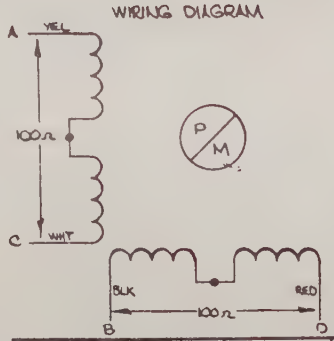
REVISIONS			
ZONE	LTR	DESCRIPTION	DATE
	A	ADDED FULL MAG AND BIT PHOTOSENSOR & TRANSFORMER	5-17-70
	B	ADDED P2 3456, J2 3456	6-2-70

FIGURE 5

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



WIRING DIAGRAM



SPECIFICATIONS

1. VOLTAGE: 28 VDC
2. CURRENT/PH: .28 AMPS
3. POWER/PH: 7.84 WATTS
4. RES./PH: 100 OHMS
5. SHAFT LENGTH: 5/8 INCH
6. SHAFT END PLAY: .020 INCH MAX
7. SHAFT RETENTION IN ARMATURE: 30 LBS. MIN.
8. PEAK TORQUE,
   ONE PHASE ENERGIZED: 4.0 OZ. - IN., MIN.
9. OTHER SPECS PER DATA SHEET, MODEL 22-SQ STEPPER MOTOR.
10. SUPPLIER: TRIEM, INC.
    SOUTH GREENSBORO ST.
    CARRBORO, N.C., 27510
    (919) 929-2153

QTY REQ'D	NOMENCLATURE OR DESCRIPTION	CODE IDENT.	IDENTIFYING NUMBER	SPECIFICATION	MATERIAL OR NOTE	ITEM NO

NEXT ASSY	USED ON	SERIAL NOS	DATE EFF	DWG REV LTR
APPLICATION		EFFECTIVITY		

UNLESS OTHERWISE SPECIFIED DIMENSION ARE IN INCHES
TOLERANCES ON
FRACTIONS ± 1/64 DECIMALS XX ± .010 .XXX ± .005 ANGLES ± ½°

MATERIAL.

FINISH

	BY	DATE
DESIGN		
DRAFTED	RM	4-13-70
CHECKED	BHR	4-13-70
APPROV	TVK	4-13-70

PART NO 1632491

DELTA DESIGN INC.
8000 FLETCHER PKWY
LA MESA CALIF 92041
TEL A/C (714) 465 4141

TITLE: STEPPER MOTOR SPEC. CONTROL DRAWING

SIZE	CODE IDENT. NO.	DRAWING NO.	REV LTR
C		C1632491	

SCALE 1:1 SHEET 1 OF 1

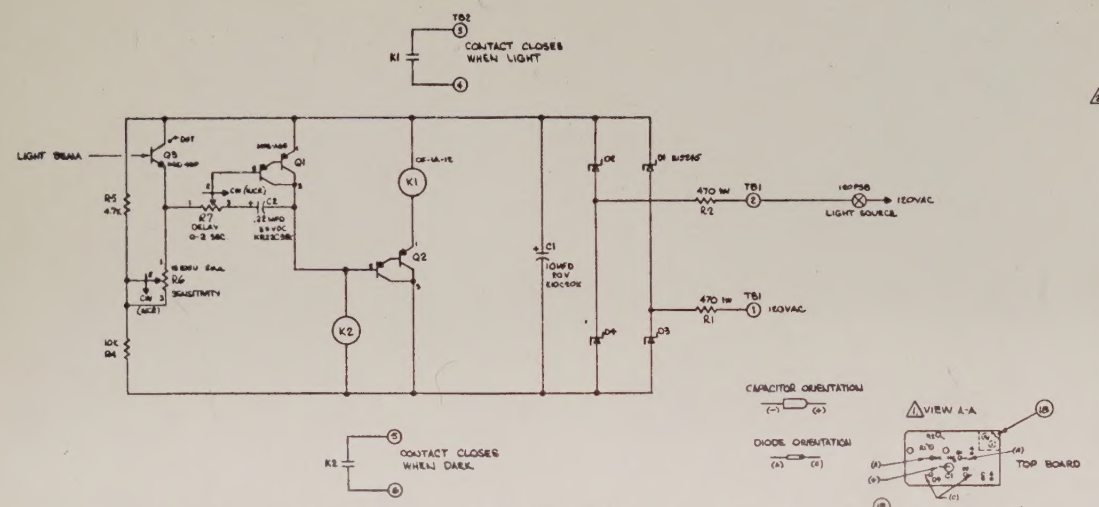
NOTES:

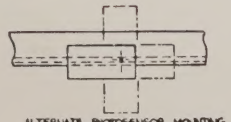
FIGURE 6

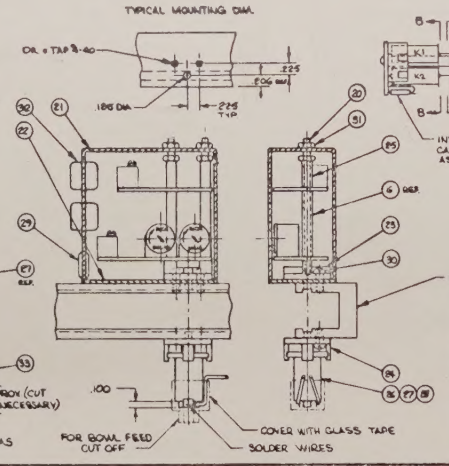
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	ITEM 20 WAS P/N 1200096	1-25-78	[illegible]
	B	D1-4 WERE IN4001, K1,2 WERE [illegible], DELETED D5	1-30-78	[illegible]
	C	C2 WAS 10 MFD, ADDED LAMP SOCKET IN APPLICATION	3-13-78	[illegible]
	D	ADDED ITEM 32, 33, 34 ECO# 7885	5-4-78	[illegible]

ADJUSTMENT PROCEDURE:

TURN BOTH POTS FULLY COUNTERCLOCKWISE THEN TURN SENSITIVITY POT ('S') CLOCKWISE 1/8 TURN BEYOND THE POINT AT WHICH CONTACTS OF K-1 (TERM 3 & 4) CLOSE. THEN TURN DELAY POT ('D') CLOCKWISE FOR DELAY AS NEEDED. (IF THE LIGHTBULB IS REPLACED, RECHECK ADJUSTMENT OF SENSITIVITY.)







QTY. REQ'D	NOMENCLATURE OR DESCRIPTION	CODE IDENT	IDENTIFYING NUMBER	SPECIFICATION	MATERIAL OR NOTE	ITEM NO
1	PLUG, BUTCH #2"		3600081			34
1	COVER, LAMP SOCKET		1500100	7933	PACKARD/DELCO	33
2	STRAIN RELIEF		1500078	SR59-4	HEYCO	32
4	#4-40 HEX NUT		6704400	STL'S STL		31
4	#4-40 X 1/4 RD HD SER.		6704401-400	STL'S STL PHIL.		30
1	GROMMET 3/8 X 1/4" I.D.		1500031			29
1	FILTER, RED		1400115			28
1	SOCKET		2500022	80152-0	SYLVANIA	27
1	LAMP		1400084	120 PSB	SYLVANIA	26
2	STAND OFF		B1631960			25
1	RETAINER, LAMP		B1631962			24
1	SUPPORT, PC BOARD		B1631961			23
1	BOTTOM PLATE		B1631964			22
1	COVER		C1631963			21
2	#4-40 X 2 1/2" THREADED ROD		B1632166	STL'S STL		20
1	TERMINAL BLOCK	TB2	1400413	520-4	KULKA	19
1	TERMINAL BLOCK	TB1	1400411	580-2	KULKA	18
2	POTENTIOMETER 2M Ω	R6,7	0500043	YS-205U	ALLEN-BRADLEY	17
1	RESISTOR 47K Ω 1/2W 5%	R5	0304720-500			16
1	RESISTOR 10K Ω 1/2W 5%	R4	0301030-500			15
2	RESISTOR 470 Ω 1 W 5%	R1,2	0347001-500			14
1	PHOTO TRANSISTOR	Q3	1200042	MRD-450	MOTOROLA	13
2	TRANSISTOR	Q1,2	1200043	MPS-A69	MOTOROLA	12
2	RELAY	K1,2	1400236	OF-1A-12	PHIPPS	11
4	DIODE ZENER 15V	D1-4	1105245	IN5245	MOTOROLA	10
						9
1	CAPACITOR 22/35V	C2	0702220-035	KR22C35K	KEMET	8
1	CAPACITOR 10/20V	C1	0701000-020	K10C20K	KEMET	7
2	SPACER		B1631710			6
REF	DRILL INSTRUCTION		B1631714			5
1	PC BOARD, BOTTOM		B1631713			4
REF	DRILL INSTRUCTION		B1631712			3
1	PC BOARD, TOP		B1631711			2
REF	ASS'Y		D2631716			1

USE IF ONLY ONE STRAIN RELIEF (ITEM 28) IS NEEDED.

KEEP SOLDERING IRON AWAY FROM PLASTIC LENS OF Q3

APPLY HUMISEAL ON BOTH SIDES OF BOARDS MASK LENS OF Q3 AGAINST HUMISEAL.

NOTES:

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± 1/64 DECIMALS .XX ± .010 .XXX ± .005 ANGLES ± 1/2°

	BY	DATE
DESIGN		
DRAFTED	[illegible]	1-25-78
CHECKED	B&R	1-9-78
APPROV		

MATERIAL:

FINISH:

NEXT ASSY | USED ON | SERIAL NOS. | DATE EFF. | DWG. REV. LTR.

APPLICATION | EFFECTIVITY

BETA DESIGN INC. 8005 FLETCHER PKWY. LA MESA, CALIF. 92041 TEL. A/C (714) 461-4141

TITLE: SCHEMATIC & PC BOARD ASS'Y PHOTOSENSOR, RELAY OUTPUT

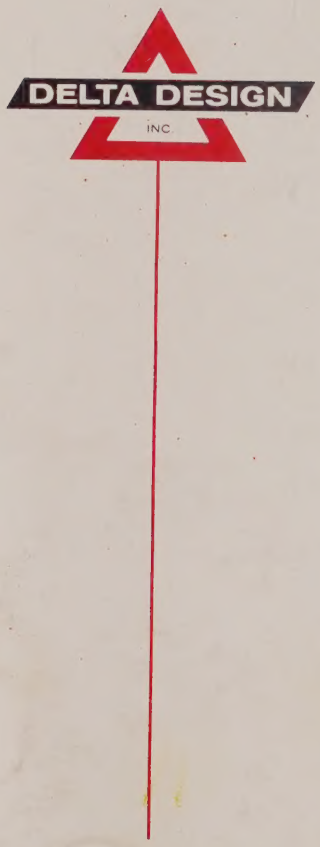
MODEL NO.

PART NO. 2631716

SIZE D | CODE IDENT NO. | DRAWING NO. D2631716 | REV. LTR. D

SCALE 1:1 & NOTED | SHEET 1 OF 1

FIGURE 7



LA MESA, CALIFORNIA

MP MASTER
MA32419